Name:
Period: $\qquad$

## SM2H 3.6 Solving Quadratic Equations by Using the Square Root Principle

Simplify. Write your answers in simplest radical form.

1. $\sqrt{50}$
2. $13 \sqrt{8}$
3. $\sqrt{-45}$
4. $\sqrt{-72}$

Find all solutions (real and imaginary) to each equation by taking square roots. Write all answers in simplest radical form and write complex answers in the form $a+b i$.
5. $a^{2}=4$
6. $b^{2}=24$
7. $c^{2}=-49$
8. $4 d^{2}=36$
9. $h^{2}+7=-4$
10. $6 k^{2}-3=-15$
11. $(m+4)^{2}=100$
12. $m^{2}+4=100$
13. $2(p+3)^{2}=8$
14. $9(r+2)^{2}=180$
15. $6(t-4)^{2}=-72$
16. $2(v-2)^{2}+4=100$
17. $3(w-1)^{2}-6=-33$
18. $-9\left(z+\frac{1}{3}\right)^{2}=4$
19. $0=3 x^{2}-54$
20. $-25=\frac{1}{4} x^{2}$
21. $\left(y+\frac{1}{6}\right)^{2}=12$
22. $2(x-4)^{2}=0$
23. $3(x+2)^{2}=6$
24. $5(x-8)^{2}=0$
25. $4(x+9)^{2}-72=0$
26. $0=-2(x+3)^{2}-8$
27. $-\frac{2}{5}(x-8)^{2}+40=0$
28. $0=\frac{1}{2}(x-3)^{2}-18$
29. Explain why you must use the " $\pm$ " sign when solving an equation by taking square roots.
30. A rock is thrown upward off the top of a cliff. It's height in feet after $t$ seconds is given by the formula $h(t)=-16 t^{2}+80$.
a. What is the height of the cliff? (In other words, how high is the rock at $t=0$ ?)
b. How high is the rock after 3 seconds?
c. How long does it take for the rock to hit the ground? (hint: when the rock hits the ground the height will be 0 so $h(t)=0$ )

Fill in all requested information for each function. Write domain and range in interval notation and end behaviors in limit notation.
31. $f(x)=-x^{2}+8 x-7$


Domain: $\qquad$ Range: $\qquad$
Symmetry: $\qquad$
Left End Behavior: $\lim _{x \rightarrow-\infty} f(x)=$ $\qquad$

Right End Behavior: $\lim _{x \rightarrow \infty} f(x)=$ $\qquad$

